

S/N 09/887,412

Amendment in Response to Office Action Dated 7/16/2003

REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application. Applicant appreciates the interview with Examiner Nguyen on December 19, 2003 in which language similar to the current amendments to the claims was discussed. Agreement was reached that the claims as amended appeared to distinguish over the prior art of record relied upon by the Examiner in the Office Action mailed July 16, 2003. Agreement was further reached that the amendments necessitated a new search by the Examiner.

CLAIMS

The Office Action dated 7/16/03 rejected claims 1-22. Claims 1-11, 13, 15, and 16 are amended by this response. Claims 23-30 are added by this amendment. Claims 1 to 30 are currently pending in this application.

35 U.S.C. § 112

Claims 2, 3, 4, 6, and 7 are objected to under 35 U.S.C. § 112 as being of improper dependent form. The Applicant has amended and corrected the dependencies of these claims.

35 U.S.C. § 102

Claims 1-6 are rejected under 35 U.S.C. § 102 as unpatentable over the Kim et al. article entitled "A Thin Shell Volume for Modeling Human Hair (IEEE Published May 2000, pages 104-111 – hereinafter the "Kim et al."). Claim 1 is amended to include the language "simulating hair by associating at least one seed

S/N 09/887,412

Amendment in Response to Office Action Dated 7/16/2003

with each grid element; and generating the hair in such a manner that at least one hair extends from each seed, at least a portion of the hair extending beyond the boundaries of the grid element.”

The disclosure describes on page 15 the surface being first seeded with “curl” starting points by painting the seeds directly on the surface of the mesh. The seeds are then grown as particle system trajectories, and the hair is adjusted for a desired effect. The particle system trajectories for the hairs extending beyond a planar boundary of the mesh grid element provide a level of realism for the hairs compared to maintaining the hairs within the plane of geometric shapes forming a thin shell volume as described with respect to Kim et al. as described with respect to Figures 1a to 1f.

Kim et al. discloses a thin shelled volume that recognizes that, “at large scale, link hair tends to form smooth surfaces that can be approximated by polygons of parametric surfaces”. The technique disclosed in Kim et al. may be equated to distributing hair to within a thin shell volume which is generated to model the outer shape of the hair. As described on page 105 with reference to Figure 1, a hairstyle is modeled with a set of surfaces, thickness is added to each surface, the curved volume is warped to a rectilinear 3D grid, and the virtual hair combing function is performed. The hairs extend through multiple volumes within the thin shell volume. There is no suggestion in Kim et al. to apply at least one seed to each mesh grid element, at least one hair extending from each seed and at least a portion of the hair extending beyond the boundaries of the mesh grid element, as recited in claim 1. The presently claimed hair configuration allows the

S/N 09/887,412

Amendment in Response to Office Action Dated 7/16/2003

hair to be more accurately modeled. Applicant therefore submits that the rejection of claim 1 under 35 USC 102 should be withdrawn.

The Applicant submits that the claims 2-6 which depend from claim 1 is patentable over the Kim et al. article for at least these reasons. Therefore, claims 1-6 should be allowed.

35 U.S.C. § 103

Claim 7 is rejected under 35 U.S.C. § 103 as unpatentable over Kim et al., and further in view of Meyer et al. Claim 1 (from which claim 7 depends) describes "simulating hair by associating at least one seed within each of the grid elements, at least one hair extending from each seed, at least a portion of the hair extending beyond the boundaries of the mesh grid element". Kim et al. does not show at least a portion of the hair extending beyond the boundaries of the mesh grid element.

Meyer et al. also does not show at least a portion of the hair extending beyond the boundaries of the mesh grid element. As such, the Applicant submits that the references fail to teach all of the claim limitations. Even if the references taught all of the claim limitations, there is no teaching to combine these references to derive the presently claimed invention. Meyer et al. should not be used to modify the teachings of Kim et al. as proposed within the Office Action mailed 7/16/2003. As such, the Applicant requests that the rejection of claim 7 based on Kim et al. in view of Meyer et al. should be withdrawn.

S/N 09/887,412

Amendment in Response to Office Action Dated 7/16/2003

Claim 8 is rejected under 35 U.S.C. § 103 as unpatentable over Rouet et al., U.S. Patent 5,758,046 issued May 26, 1998 entitled "Method and Apparatus For Creating Lifelike Digital Presentation of Hair and Other Fine-Grained Images" (hereinafter "Rouet et al."). Claim 8 is amended to include the language "at least one hair extending from each seed so that at least a portion of the hair extends in a direction that has a perpendicular component to a plane formed by the mesh grid element." Rouet et al. describes creating fine grained particles such as hairs that remain within one plane. For instance, Fig. 6 shows two hairs 610 and 620 that intersect at a darkened region 630 within a pixel 600. Claim 8 also includes the limitation "at least a portion of the hair extends in a direction that has a perpendicular component to a plane formed by the mesh grid element," which is not shown by the hairs of Rouet et al. that remain within a single plane. As such, the Applicant requests that the rejection of claim 8 based on Rouet et al. should be withdrawn.

Claims 9-13 are rejected over Rouet et al. in view of Kim et al. Claims 9-13 each depend from claim 8, and therefore for at least the reasons set forth above, these claims should be allowed. Additionally, claim 9 recites "at least a portion of the hair extends beyond the boundaries of the mesh grid element" which is not shown by Rouet et al. or Kim et al. There is no suggestion in either of these references for one having ordinary skill in the art to derive the combination of these claim limitations.

Claims 15-20, which are rejected by Rouet et al. in view of Kim et al. include the limitation "at least one hair extending from each seed in a direction

S/N 09/887,412

Amendment in Response to Office Action Dated 7/16/2003

that has a perpendicular component to a plane formed by the mesh grid element such that at least a portion of the hair extends outwardly from the boundaries of the mesh grid element". As mentioned above, neither Rouet et al. nor Kim et al. show at least a portion of the hair extending in a direction that has a perpendicular component to a plane formed by the mesh grid element or at least a portion of the hair extending outwardly from the boundaries of the mesh grid element. Therefore, claim 15 and claims 16-20, each of which depends from claim 15, should be allowed for at least the same reason.

Claims 14, 21, and 22 are rejected under 35 USC 103(a) as unpatentable over Rouet et al. in view of the Meyer et al. article entitled "Interactive Volumetric Textures" (IMAGIS laboratorie GRAVIR/IMAG-INRIA, France, published 1998), (hereinafter Meyer et al.). Rouet et al. has been described above. Meyer et al. describes a method for interactively rendering complex repetitive scenes such as landscapes, fur, etc. by slicing a piece of 3D geometry that falls within the slice. Claim 14 contains the claim language "the instructions to implement the modeling agent further comprise instructions to utilize the volume texture to generate semi-transparent concentric shells of the volume texture, and to layer the shells over select areas of the object surface". The Applicant submits that the rejection of claim 14 over Rouet et al. in view of the Meyer et al. does not remedy the deficiencies in the rejection of claim 8 under 35 USC 103(a) over Rouet et al. for at least the reasons described above. Therefore, claim 14 should be allowed for at least the reasons described above with respect to claim 8. Similarly, the Applicant submits that the rejection of claims 21 and 22 (which ultimately depend from claim 15) over Rouet et al. in view of the Meyer et al. does not remedy the

S/N 09/887,412

Amendment in Response to Office Action Dated 7/16/2003

deficiencies in the rejection of claim 15 under USC 103(a) over Rouet et al. for at least the reasons described above. Therefore, claims 21 and 22 should be allowed for at least the same reasons as described above for claim 15.

S/N 09/887,412

Amendment in Response to Office Action Dated 7/16/2003

Conclusion

In view of the following remarks, Applicant respectfully requests reconsideration and allowance of the subject matter application.

Respectfully Submitted,

Lee & Hayes, PLLC
421 W. Riverside Avenue, Suite 500
Spokane, WA 99201

Date: 1/14/04

By: Glenn B. Foster
Glenn B. Foster
Reg. No. 32,676